

Florida Department of Transportation 2016 Performance Report

Mobility

Efficient Movement of People and Goods



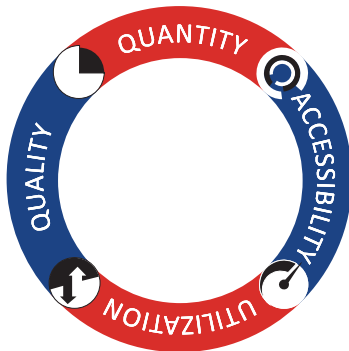
TABLE OF CONTENTS

3-1	Introduction
3-2	2016 Performance Highlights
3-3	Florida Transportation Plan
3-4	Travel Quantity
3-5	Vehicle Miles of Travel
3-6	Vehicle Miles of Travel per Capita
3-7	Combination Truck Miles of Travel
3-8	Transit Passenger Trips
3-9	Aviation Passenger Boardings
3-9	Seaport Passenger Trips
3-10	Rail Passenger Trips
3-11	TEU (20-foot equivalent unit) Containers
3-12	Freight Tonnage
3-13	National Intermodal Loadings
3-15	Travel Quality
3-16	Highway Level of Service (LOS)
3-17	Bicycle & Pedestrian LOS
3-18	Vehicle Hours of Delay
3-19	Combination Truck Hours of Delay
3-20	Travel Time Reliability
3-22	Rail Departure Reliability
3-23	Airport Departure Reliability
3-25	Accessibility
3-25	Commute Times Greater than 30 Minutes
3-26	Average Weekday Hours of Transit Service
3-27	Bicycle and Pedestrian Facilities
3-28	Aviation, Rail, and Seaport Highway Adequacy
3-30	Utilization
3-30	Transit Trips per Revenue Mile
3-31	Miles Heavily Congested
3-33	Travel Heavily Congested
3-36	Partner Connections

MOBILITY

This report is part of the Florida Department of Transportation's (FDOT) Performance-Based Planning and Programming Process. For a description of that process, updates to this report and other FDOT transportation performance reporting initiatives, go to FDOTPerforms.org.

INTRODUCTION



Core Measures span the four dimensions of mobility

Moving people and goods efficiently, affordably, and reliably is vital to Florida's economic prosperity. By providing mobility, FDOT and other transportation system operators make a significant contribution to Florida's economic competitiveness and quality of life.

Florida travel is diverse. People use various modes to commute to jobs, conduct business, and obtain services for many other purposes. They walk, drive, bike, and use public transit. Raw materials, finished products, and packages comprise a robust freight movement system of air cargo, trucking, seaports, and freight railroads—and the connections between these modes. Because mobility is vital, measuring mobility performance is likewise essential.

FDOT's core mobility measures include:

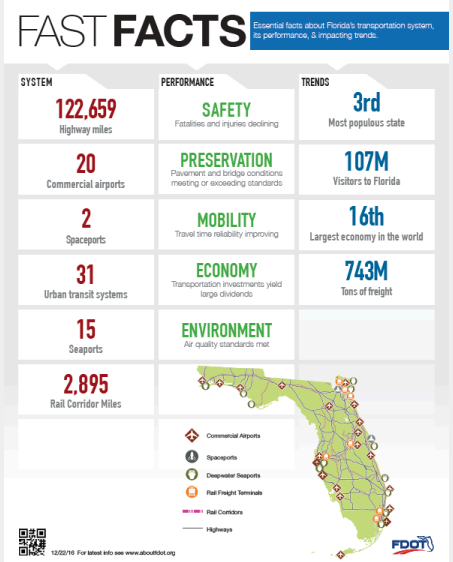
-  **Travel Quantity**
-  **Travel Quality**
-  **Accessibility**
-  **System Utilization**

Together they provide a picture of how the transportation system is being used, how travelers experience the system, how easy or hard it is to use the system, and what system capacity remains.

Florida's Transportation System

Florida's transportation system users have varied mobility needs and requirements. Passenger and freight movement occurs through our extensive network of highways, airports, seaports/waterways, public transit systems, and rail lines. Bicycle and pedestrian accommodation has also become a very important emphasis area for FDOT, communities and others. Florida's spaceports and launch facilities are also significant elements of our 21st century transportation system.

Florida has identified a Strategic Intermodal System (SIS) that includes those transportation facilities and services of statewide and interregional significance. This priority multimodal network carries most of Florida's passenger and freight trips. Essential facts about Florida's transportation system, including the State Highway System (SHS) can be found in Fast Facts at aboutfdot.org



2016 PERFORMANCE HIGHLIGHTS

Mobility, including choices, is a strategic FDOT priority and primary focus of the Florida Transportation Plan. Key performance highlights are:

- Vehicle miles traveled (VMT)—overall and per capita—increased slightly since 2012 on both the State Highway System (SHS) and the Strategic Intermodal System (SIS).
- Public transit ridership in 2015 decreased 2.7 percent (nearly 7.5 million annual trips) from its peak level in 2013.
- Florida's passenger rail ridership increased by nearly 38 percent since 2006, mainly due to Miami-Dade's Metrorail and Central Florida's new SunRail system.
- Freight truck tonnage has trended upwards since 2011, with a significant increase in 2015. Air cargo and waterborne freight tonnage have remained relatively flat since 2011, while rail freight tonnage increased from 2008 through 2013, but decreased in 2014 (latest available data).
- Vehicle hours of delay in the seven most populous urban metropolitan areas on both the SHS and SIS has worsened since 2010, although levels are substantially better than in the early/mid 2000's.
- Travel time reliability on freeways in the seven most populous urban metropolitan areas improved between 2006 and 2012, but declined over the ensuing years back to 2006 levels.
- On-time departures at airports occurred 82.6 percent of the time in 2015, and on-time passenger rail departures for SunRail and Tri-Rail occurred 96 and 81 percent of the time respectively in 2015, while on-time departures for Amtrak declined to 26 percent.
- Florida roads are increasingly accommodating of pedestrians and bicyclists as sidewalk mileage on the SHS in urban areas increased from 59.4 to 65.0 percent between 2011 and 2015, while bike lane and shoulder mileage increased from 57.6 to 61.5 percent.
- Heavy congestion in the seven most populous urban metropolitan areas increased slightly since 2010.

FLORIDA TRANSPORTATION PLAN



The Florida Transportation Plan (FTP) is Florida's long range transportation plan for meeting the dynamic mobility needs of residents, businesses, and visitors. FDOT's Mobility Performance Report aligns with two FTP goals:

- *Efficient and Reliable Mobility for People and Freight*
- *More Transportation Choices for People and Freight*

This report highlights the core and supporting performance measures related to these FTP goals, and other transportation plans and programs.

FTP Goal: *Efficient and Reliable Mobility for People and Freight*

FTP Objectives

- Reduce delays related to bottlenecks, gaps, and crashes and other incidents for all modes of Florida's transportation system
- Increase the reliability of all modes of Florida's transportation system
- Increase customer satisfaction with Florida's transportation system and regulatory processes for residents, visitors, and businesses
- Increase the efficiency of the supply chain for freight moving to, from, and through Florida
- Increase the efficiency and flexibility of transportation related regulatory processes

Related Performance Report Measures

Travel Quantity

- Vehicle Miles of Travel
- Vehicle Miles of Travel per Capita
- Combination Truck Miles of Travel
- Transit Passenger Trips
- Aviation Passenger Boardings
- Seaport Passenger Trips
- Rail Passenger Trips

Accessibility

- Bicycle and Pedestrian Facilities
- Aviation, Rail, and Seaport Highway Adequacy

Travel Quality

- Level of Service (LOS)
- Bicycle and Pedestrian LOS
- Vehicle Hours of Delay
- Combination Truck Hours of Delay
- Travel Time Reliability

System Utilization

- Miles Heavily Congested
- Travel Heavily Congested

FTP Goal: *More Transportation Choices for People and Freight*

FTP Objectives

- Increase the use of new mobility options and technologies such as shared, automated, and connected vehicles
- Increase the share of person trips using public transportation and other alternatives to single occupancy motor vehicles
- Increase the number of quality options for visitor travel to, from, and within Florida
- Increase the number of quality options for moving freight to, from, and within Florida
- Increase the efficiency and convenience of connecting between multiple modes of transportation

Related Performance Report Measures

Travel Quantity

- Transit Passenger Trips
- Aviation Passenger Boardings
- Seaport Passenger Trips
- Rail Passenger Trips
- TEU Containers
- Freight Tonnage

Accessibility

- Commute Times Greater than 30 Minutes
- Bicycle and Pedestrian Facilities

Travel Quality

- Vehicle Hours of Delay
- Bicycle and Pedestrian LOS
- Combination Truck Hours of Delay
- Aviation and Rail Departure Reliability

System Utilization

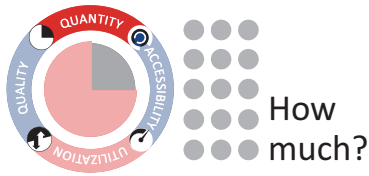
- Miles Heavily Congested
- Transit Trips per Revenue Mile








NOTE: Related Performance Measures may appear in both FTP Goals

TRAVEL QUANTITY



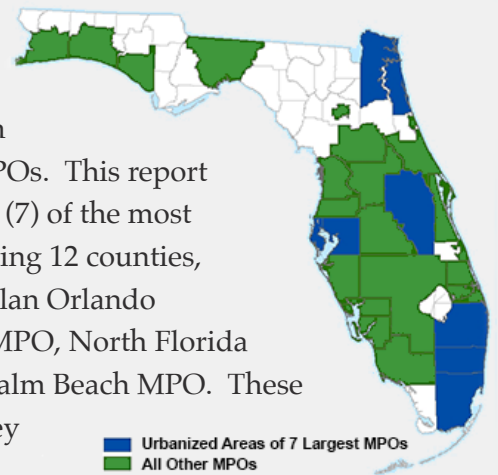
FDOT has identified a set of core measures and supporting measures related to transportation system mobility. Travel quantity, as a core measure, reflects the magnitude of travel on the transportation system, or a particular mode, facility or transportation service—i.e., how many people move or how much freight is transported. The supporting measures for travel quantity are:



-  Vehicle Miles of Travel
-  Vehicle Miles of Travel Per Capita
-  Combination Truck Miles of Travel
-  Transit Passenger Trips
-  Aviation, Seaport, and Rail Passenger Trips
-  TEU (20-foot equivalent unit) Containers
-  Freight (Truck, Seaport, Rail, Aviation) Tonnage

Florida's 7 Largest MPOs

Metropolitan Planning Organizations (MPOs) are transportation organizations that study, plan, prioritize and coordinate transportation improvements throughout urbanized areas. In Florida there are 27 MPOs. This report highlights mobility measures at both the statewide level and for seven (7) of the most populated metropolitan planning areas. These seven MPOs, representing 12 counties, include: Broward MPO, Forward Pinellas, Hillsborough MPO, MetroPlan Orlando (representing Orange, Osceola, and Seminole counties), Miami-Dade MPO, North Florida TPO (representing Clay, Duval, Nassau, and St. Johns counties), and Palm Beach MPO. These MPOs represent the most urbanized / congested areas of Florida, as they comprise more than 58 percent of the state's population.



Vehicle Miles of Travel

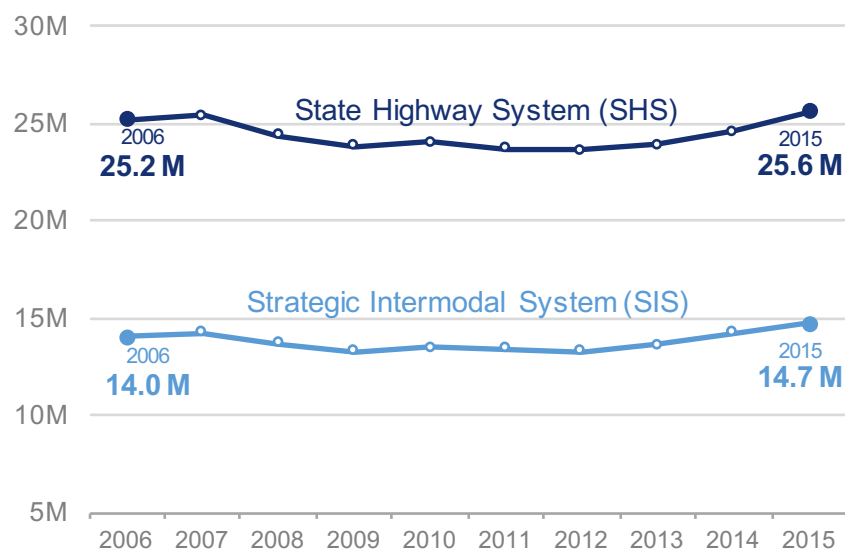


Vehicle Miles of Travel (VMT) during the peak travel period is an indicator of system demand at the time of greatest need/use. VMT has increased since 2012 for both the SHS and the SIS.

Figure 1 shows State Highway System (SHS) and Strategic Intermodal System (SIS) Vehicle Miles of Travel (VMT) in millions of miles during the peak travel period over ten years. VMT during the peak travel period is an indicator of system demand at the time of greatest need/use. VMT has increased slightly since 2012 on both the SHS and the SIS.

Growing—or even steady—VMT underscores the importance of continued investment in maintenance, capacity improvements, and improved operations to maximize transportation system efficiency.

Figure 1: Vehicle Miles Traveled Daily During Peak Period (millions)



SOURCE: FDOT Multimodal Mobility Performance Measures Source Book

Mobility Performance Measures

Since moving people and goods is the core function of transportation agencies, performance measures are essential. Mobility measures are organized by four broad dimensions/categories: quantity of travel, quality of service, accessibility, and utilization. Florida is a national leader and innovator in developing mobility performance measures. These measures can be used at both the state and regional levels.



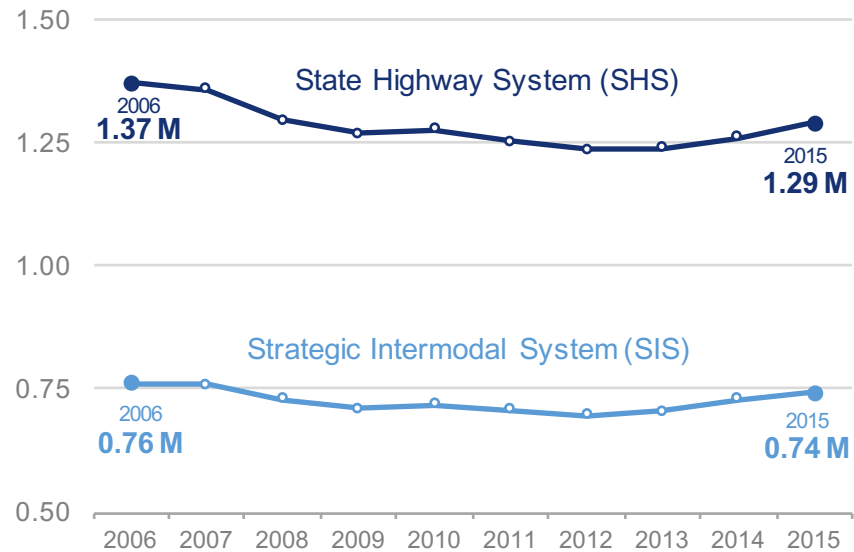
Vehicle Miles of Travel per Capita



VMT per capita has been increasing over the past several years after a steady decline.

Similar to overall VMT in **Figure 1**, VMT per capita began to increase after 2012. **Figure 2** shows that VMT per capita during the peak travel period declined on both the SHS and the SIS over most of the past decade (7.1 and 2.6 percent respectively). Depending on the extent to which this upward trend continues, it could impact future system capacity needs.

Figure 2: Vehicle Miles Traveled Daily During Peak Period Per Capita



SOURCE: FDOT Multimodal Mobility Performance Measures Source Book

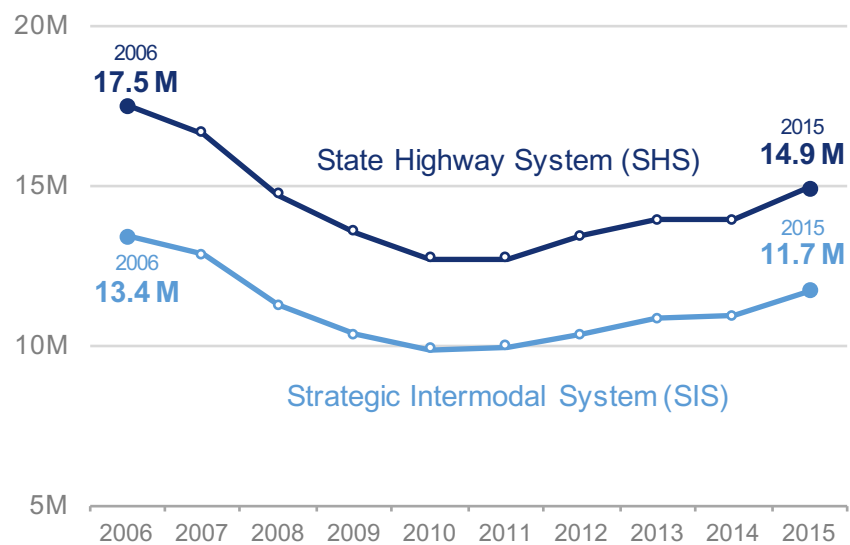
Combination Truck Miles of Travel



Combination truck miles of travel is a measure of transportation system usage associated with moving vast quantities of goods and materials. While truck miles traveled are steadily trending upward, they are still below 2006 levels.

Combination truck miles of travel is a measure of motor carrier activity. It reflects the vast quantity of goods and materials being moved to meet the varied needs of consumers and producers. Combination vehicles typically consist of a tractor and a trailer. As shown in **Figure 3**, combination truck miles traveled has trended upward since 2010 on the SHS and the SIS. However, it is still below 2006 levels. As truck miles traveled increases, it typically reflects corresponding economic growth and the possible need to add system capacity.

Figure 3: Combination Truck Miles Traveled Daily (millions)



SOURCE: FDOT Multimodal Mobility Performance Measures Source Book

Freight Mobility and Trade

The FDOT Office of Freight, Logistics, and Passenger Operations works to connect, develop, and implement the freight planning process by coordinating public and privately-owned resources to create multimodal connections. Florida is a global hub for trade, logistics, and export-oriented manufacturing. The PortMiami tunnel provides direct access between the seaport (Miami-Dade County's second largest economic generator) and Interstate highways to improve its hub connection and reduce congestion on downtown streets. Nationally it has been recognized as a noteworthy major investment for freight mobility and overall system efficiency and performance.



Transit Passenger Trips



Transit options and access enhance local and regional mobility and livability for many Florida communities, businesses, and residents. FDOT's target is to increase transit ridership at twice the rate of population growth.

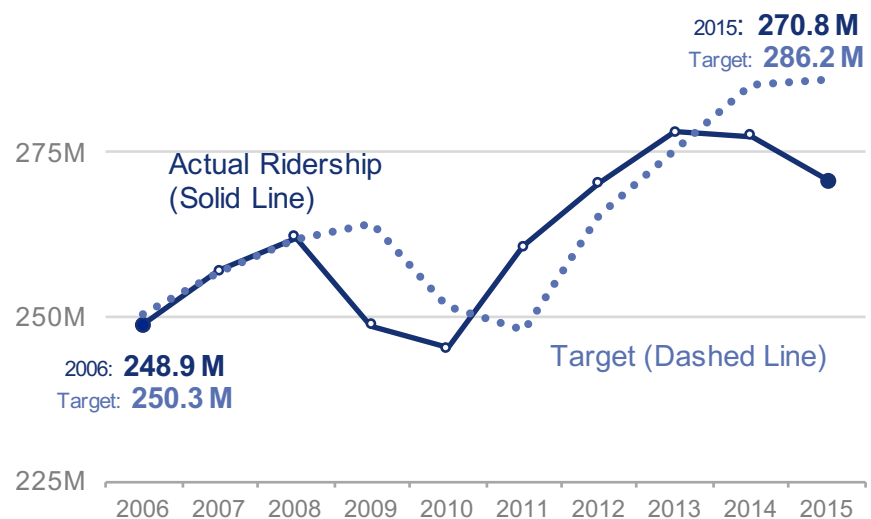
FDOT assists its transit partners to increase ridership. Approximately 91 percent of Floridians live in urban areas and 80 percent live in transit-served areas. Transit use helps reduce congestion and greenhouse gas emissions.

Figure 4 shows that passenger trips served by transit throughout Florida's 31 fixed-route transit systems (including Metrorail, Tri-Rail and SunRail, but not Amtrak) has declined since 2013. In 2015 there were approximately 270.8 million transit trips in Florida, a decrease of 2.4 percent from 2014—falling short of the target of 286.2 million transit trips.

FDOT uses the ratio of transit growth to population growth to evaluate transit ridership performance. For most of the past decade Florida's transit ridership growth was near to, or more than, the target. However, transit ridership has not met this threshold since 2013.

In 2015 there were 270.8 million Florida transit trips, a decrease of 2.4 percent from 2014 and 15.4 million below the 286.2 million target.

Figure 4: Annual Transit Passenger Trips



SOURCE: FDOT Multimodal Mobility Performance Measures Source Book

Note: Population data used to assess the ridership target came from the Office of Economic and Demographic Research.

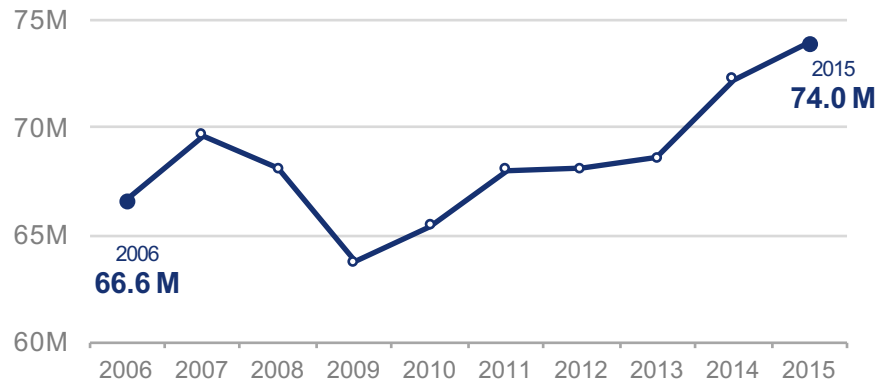
Aviation Passenger Boardings



Annual aviation boardings increased to 74.0 million in 2015.

Figure 5 shows Florida's substantial growth in aviation passenger boardings between 2006 and 2015. The number of passenger boardings increased in 2015 to 74.0 million. The six-year upward trend since 2009 reflects Florida's special attraction as both a tourist and a business origin/destination—bolstering the state's competitive position.

Figure 5: Annual Aviation Passenger Boardings



SOURCE: FDOT; Florida Transportation Indicators: Annual Enplanements at Major Florida Commercial Airports, www.floridatransportationindicators.org

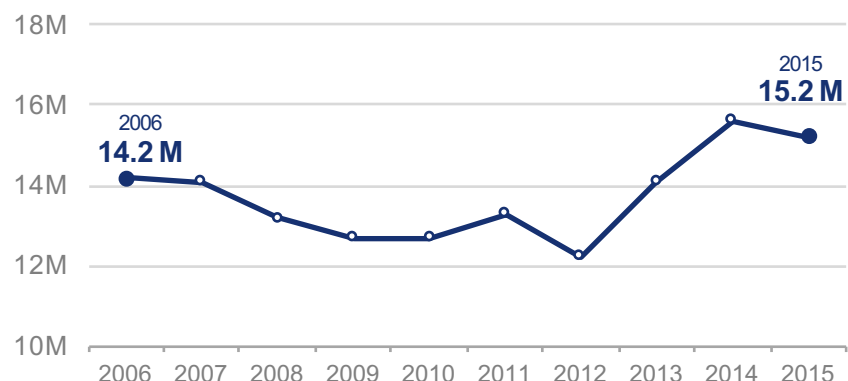
Seaport Passenger Trips



60 percent of all U.S. cruise passengers embark from Florida seaports.

Figure 6 shows Florida's overall increase in seaport passenger (cruise) trips between 2006 and 2015. In 2015, the number of trips declined by 2.6 percent to 15.2 million passengers from its highest reported level in 2014. 2015 trips were more than 7 percent higher than 2006. Significantly, 60 percent of all U.S. cruise passengers embark from Florida seaports. As this upward trend continues it will positively impact the state's economy.

Figure 6: Annual Seaport Passenger Trips



SOURCE: FDOT Multimodal Mobility Performance Measures Source Book

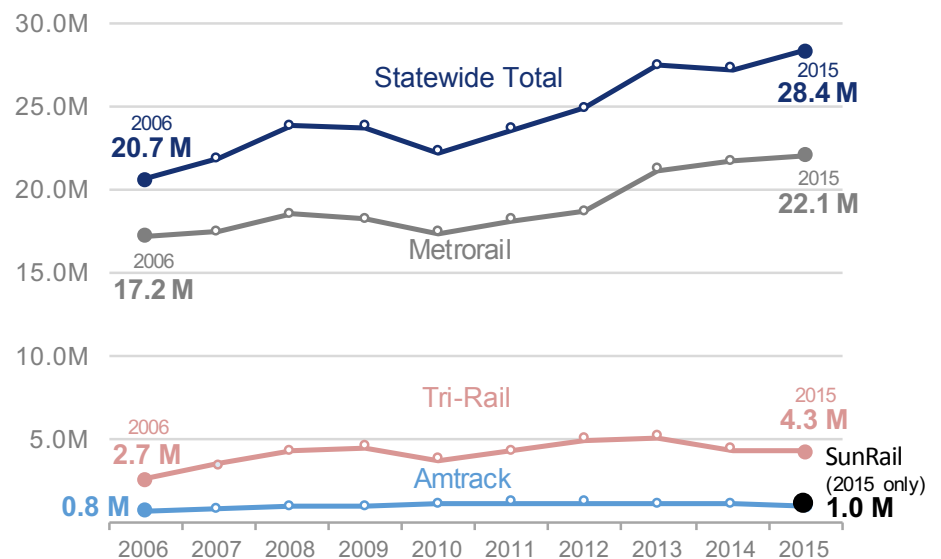
Rail Passenger Trips



Overall passenger rail ridership has increased. The 2015 increase is primarily due to Metrorail and the new SunRail system.

Rail passenger ridership consists of the combined annual passenger trips on Metrorail, Tri-Rail, SunRail and Amtrak (SunRail data is only available for 2015¹). As **Figure 7** shows, overall passenger rail ridership has trended upward over the past decade. The 2015 increase is primarily due to Metrorail and the 1 million new SunRail system passengers. Metrorail ridership has been increasing since 2010, but Tri-Rail and Amtrak ridership declined over the past two years.

Figure 7: Annual Rail Passenger Trips



NOTE: The 2015 data point for SunRail's annual passengers is the same as Amtrak's 2015 number of passengers—1 million passengers.

¹ SunRail officially opened on May 1, 2014. As a result, 2015 was the first year for which a full year of data was available.

TEU (20-foot equivalent unit) Containers

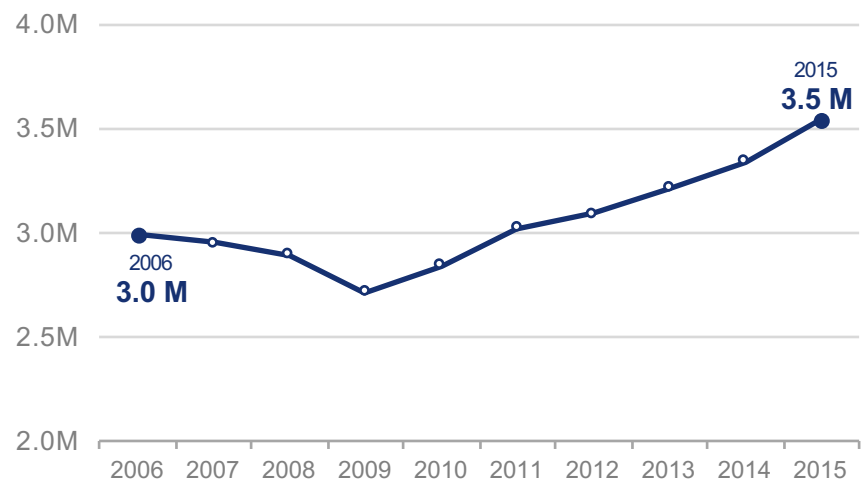


The efficient movement of goods is key to Florida's economic strength and growth. The 20-foot equivalent unit (TEU) container provides an approximate gauge of intermodal container movements. The TEU is based on the volume of a 20-foot-long intermodal container, a standard-sized metal box which can be easily transferred between different modes of transportation, such as ships, trains and trucks.

Figure 8 shows that since 2009 Florida had a nearly 31 percent increase in TEUs moving through its seaports, reflecting a number of positive trends including expanded economic activity/trade, and growing use of intermodal transportation. If this rate of growth continues, the state's investments in system capacity, intermodal connectivity, and improved transportation operations—especially on the Strategic Intermodal System (SIS)—will become even more important to accommodate economic expansion.

Since 2009 Florida has had a nearly 31 percent increase in TEU Containers moving through its seaports.

Figure 8: Annual TEU Containers Moved Through Florida Seaports



SOURCE: FDOT Multimodal Mobility Performance Measures Source Book

Freight Tonnage

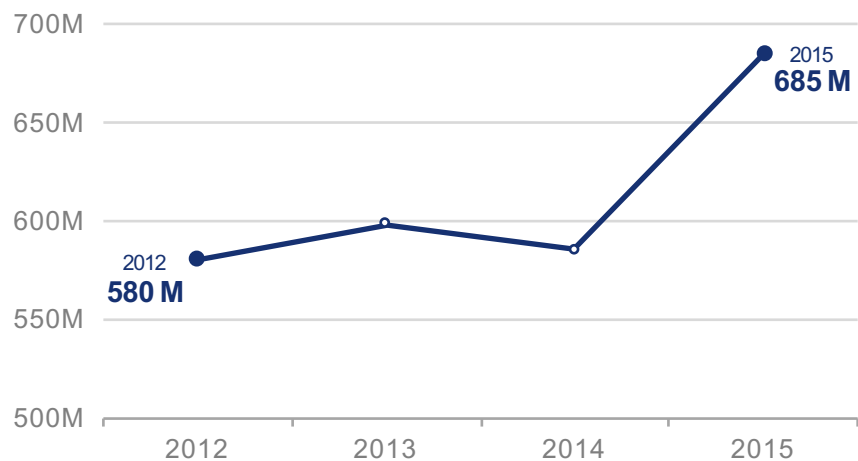


The freight tonnage measure reflects the extent to which freight is moving on Florida's transportation system across the various modes.

Figures 9(a) and 9(b) show Florida freight tonnage by mode (data in Figure 9a includes only four years due to a methodological change in 2012). Products and raw materials increasingly are moving between origins and destinations using more than one transportation mode—making connectivity with the Strategic Intermodal System (SIS) of particular significance (data for rail tonnage was not available for 2015).

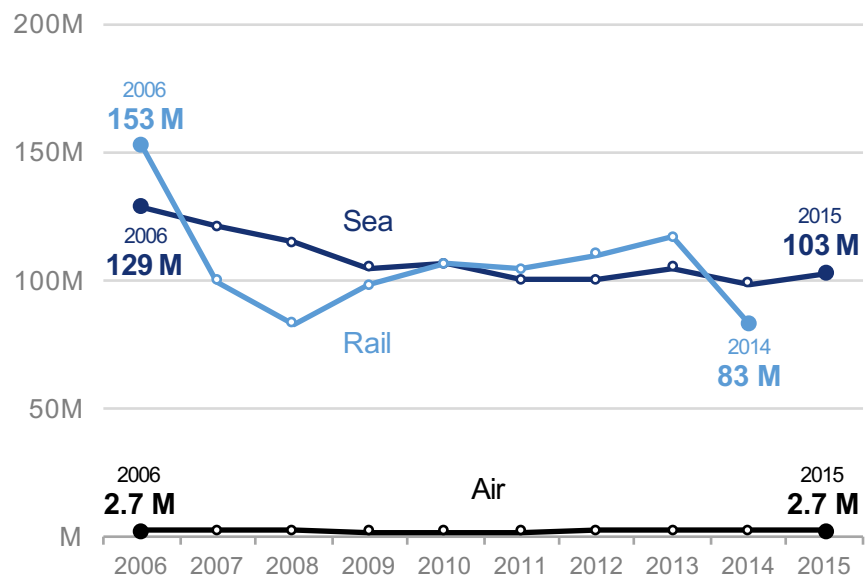
Truck freight tonnage increased by 18.1% since 2012, with most of the increase between 2014 and 2015.

Figure 9(a): Annual Freight Tonnage by Truck



SOURCE: FDOT Multimodal Mobility Performance Measures Source Book

Figure 9(b): Annual Freight Tonnage by Sea, Rail, and Air



SOURCE: FDOT Multimodal Mobility Performance Measures Source Book

Freight movement is part of a dynamic and fluid logistics system in which shippers and receivers of raw materials, intermediate products, and final goods rely on making the most cost-effective use of each available mode. Florida is well positioned to meet these requirements, particularly through its extensive SIS. As seen in **Figures 9(a)** and **9(b)** on the previous page, Florida freight trends indicate that:

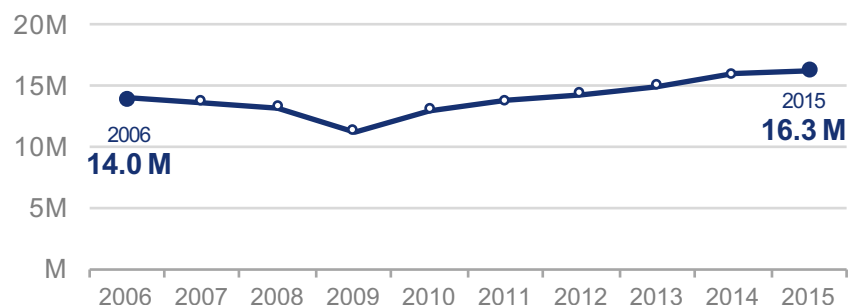
- Truck tonnage increased nearly 17 percent from 2014 to 2015. With a growing economy, intermodal movements have increased.
- Warehousing and distribution rely heavily on trucking, and some of this growth may reflect the advantages of improved logistics favoring surface movement of goods and materials.
- Rail tonnage increased steadily from 2008 through 2013, but declined in 2014 (latest year for which data is available).
- Seaport cargo tonnage levels have remained relatively steady since 2011.
- Air cargo tonnage has remained flat over the ten-year period. Typically air cargo is low weight/high value, so tonnage alone can underestimate the economic importance of these movements.

National Intermodal Loadings

The intermodal movement/transfer of freight between modes has been increasing nationally. **Figure 10** shows that in 2015 more than 16 million containers and trailers used multiple modes. State level data is not immediately available, so this national trend is presented for context and could approximate Florida's trend as well. Intermodal movements are growing because they combine the best capabilities and advantages of each transportation mode to deliver service, efficiency, and logistical solutions for shippers.

By collaborating, trucking companies, ocean steamship lines and railroads are able to provide a cost-effective, seamless, reliable, and efficient way to move freight from origin to destination. Throughout the process, intermodal facilitators, or third-party logistics providers, arrange for each piece of the move from pick up to storage to drop off.

Figure 10: Annual National Intermodal Loadings (millions)



SOURCE: Intermodal Association of North America (IANA) Intermodal Market Trends and Statistics Report

KEY STRATEGIES TO IMPROVE TRAVEL QUANTITY

FDOT helps to ensure continued progress for improving travel quantity through strategies such as those listed below. It is important to note that travel quantity is also impacted by trends beyond FDOT's control including fuel prices and economic conditions.







- Continue to support the high-priority role of the Strategic Intermodal System (SIS) connecting Florida's regions and connecting Florida to other states and nations.
- Continue the Future Corridor Planning Process to transform existing interregional corridors and to close interregional connectivity gaps, building on guiding principles developed cooperatively with state, regional, and local agencies and environmental stakeholders.
- Increase the efficiency and capacity of Florida's major airports, seaports, spaceports, and other freight and passenger terminals through strategic investments in new capacity and enhanced operations.
- Increase the efficiency, capacity, and connectivity of major truck, rail, and water corridors through targeted capacity improvements, accommodations for heavy freight movement, and separation of freight and passenger traffic on shared corridors.
- Promote multi-modal options, including non-motorized travel, for people movement within existing and future corridors.
- Continue implementation of FDOT's Complete Streets Policy to improve access and mobility for public transit riders, pedestrians and bicyclists.
- Enhance Florida's role as a global hub by increasing the flow of domestic and international trade through the state's seaports and airports.
- Ensure connectivity between the Strategic Intermodal System (SIS) and regional and local transportation facilities to support complete end-to-end trips.
- Promote travel options that increase vehicle occupancy.

TRAVEL QUALITY



How good
or bad?

FDOT has identified a set of core measures and supporting measures related to transportation system mobility. The travel quality core measure helps to generally assess how good or bad the travel experience is using a range of supporting measures:

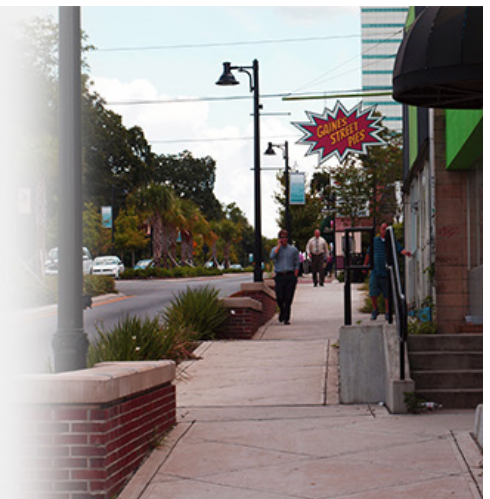
-  Highway Level of Service (LOS)
-  Bicycle and Pedestrian LOS
-  Vehicle Hours of Delay
-  Combination Truck Hours of Delay
-  Travel Time Reliability
-  Rail and Aviation Reliability

Level of Service (LOS), delay, and reliability each describe the quality of the transportation system in different ways. At a facility level, LOS is an excellent measure that approximates a user's perspective of how well the facility is operating in relation to traffic flow and congestion. Travel time reliability is important because most travelers are less tolerant of unexpected delays, as such delays often have consequences worse than drivers face with routine congestion. Travelers also tend to remember the few bad days spent in traffic, rather than an average time for travel throughout the year.

Complete Streets

Complete Streets incorporates context appropriate roadway designs that accommodate users of all ages and abilities, including bicyclists, pedestrians, motorists, transit riders, and freight. FDOT recognizes that demographics, travel preferences, business practices, local land development patterns, and the built environment require a broad focus beyond the automobile. A Complete Street considers:

- Context-appropriate streets
- Economic development
- Safety of pedestrians and cyclists
- Right size streets to fit context
- Cost-effective solutions



Highway Level of Service (LOS)



Highway Level of Service (LOS) provides a measure for evaluating roadway performance by relating travel demand to roadway capacity. Various LOS “grades” are established along with thresholds that provide a basic standard of acceptability. There are several key elements that affect vehicle LOS:

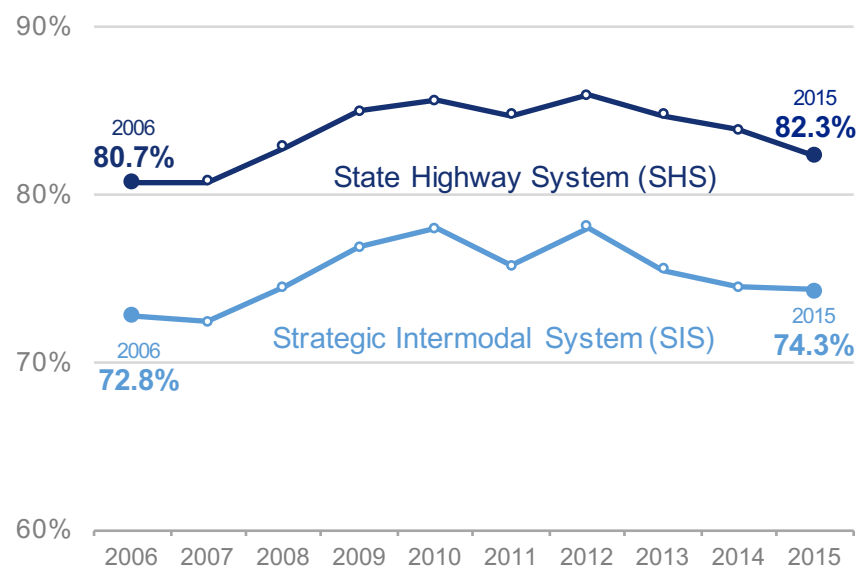
- Traffic volume
- Number of travel lanes
- Roadway facility type (uninterrupted vs. interrupted flow)
- Travel flow (persons or vehicles per hour)
- Travel speeds

FDOT’s policy is that the State Highway System (SHS) perform at acceptable operating conditions.

In 2015, 82.3 percent of the SHS and 74.3 percent of the Strategic Intermodal System (SIS) during the peak period of travel met or exceeded acceptable LOS criteria—a decrease of 1.8 percent and 0.1 percent respectively over the prior year (as shown in **Figure 11**). Maintaining acceptable LOS performance is important for Florida to support the effective and efficient movement of people and goods.

The overall LOS trend since 2006 is generally steady travel improvement, but decreases occurred on both the SHS and the SIS since 2012.

Figure 11: Travel Meeting Acceptable LOS During Daily Peak Period



SOURCE: FDOT Multimodal Mobility Performance Measures Source Book

Bicycle & Pedestrian LOS

SUPPORTING MEASURE

58 percent of SHS roads in urban areas had a bicycle LOS of "C" or better in 2015.

23 percent of SHS roads in urban areas had a pedestrian LOS of "C" or better in 2015.

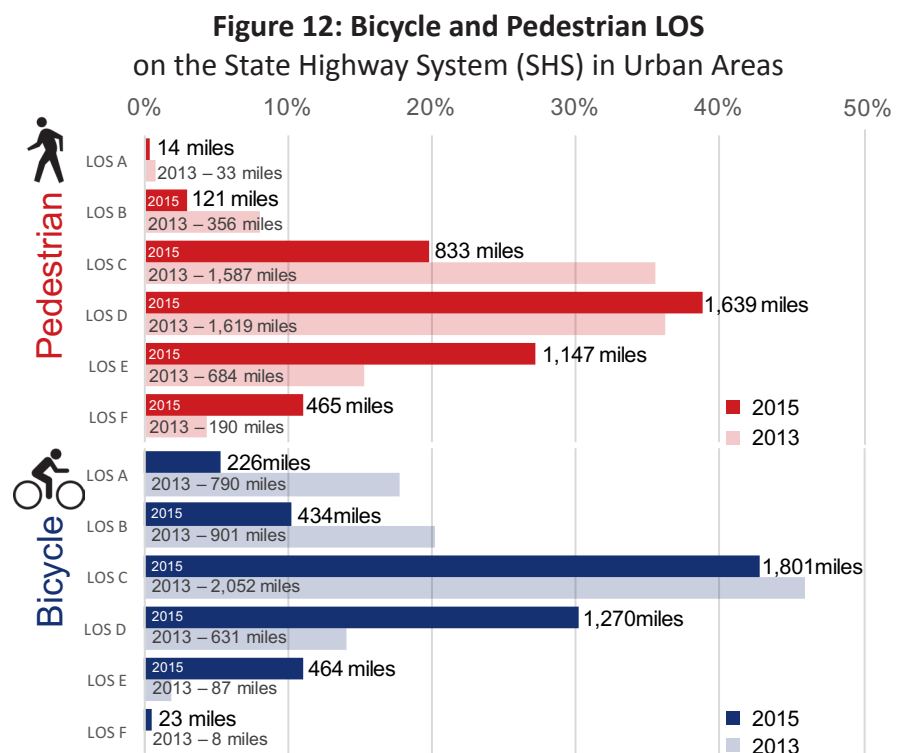
Bicycle Level of Service (LOS) is a measure of the quality of service a roadway provides to bicyclists. Unlike automobile LOS which is largely affected by the number of motorized vehicles on the road, bicycle LOS is based on factors and conditions that are particularly important to bicyclists:

- Presence of bike lanes/shoulders and other outside travel lane considerations
- Motorized vehicle volume (less being better)
- Motorized vehicle speeds (lower being better)
- Heavy vehicle (truck) volume (less being better)
- Pavement conditions

Pedestrian LOS is a measure of the quality of service a roadway provides to pedestrians. Similar to bicycle LOS, pedestrian LOS is based on factors and conditions that are important to pedestrians:

- Existence of sidewalks
- Lateral separation of pedestrians from motorized vehicles
- Motorized vehicle volume (less being better)
- Motorized vehicle speeds (lower being better)

Figure 12 highlights that 58 percent of SHS roads in urban areas² had a bicycle LOS of "C" or better in 2015, while only 23 percent of SHS roads in urban areas had a pedestrian LOS of "C" or better.



SOURCE: FDOT Multimodal Mobility Performance Measures Source Book

² This includes all urban areas in Florida.

Vehicle Hours of Delay

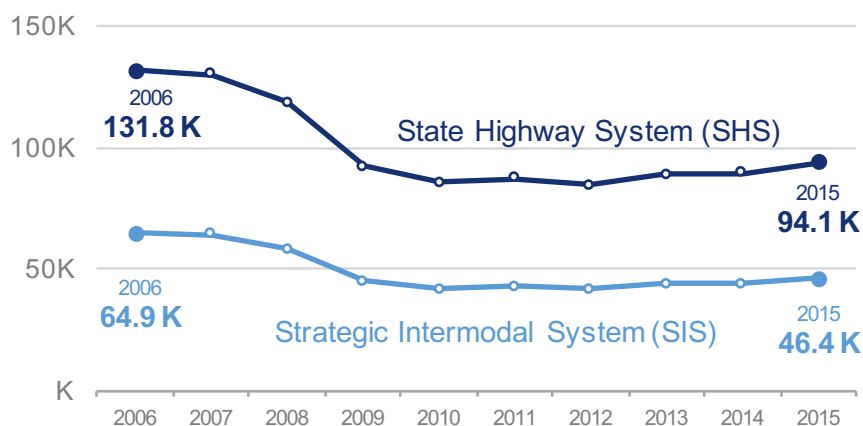


Vehicle hours of delay on the SHS and the SIS has generally been declining over the past decade. A reduction in delay translates into savings for companies and individuals.

As shown in **Figure 13a**, vehicle hours of delay statewide on the SHS and the SIS have generally been declining over the past decade. Delay is important because ultimately it equates to cost in time and money for individuals and businesses.

Delay, however, should not be considered in isolation from other factors. Note, for example, the steep drop in delay between 2007 and 2010. This demonstrates that while delay reduction is desirable from a transportation perspective, that reduction is undesirable if it is due to an economic downturn (which likely explains much of the drop during that period).

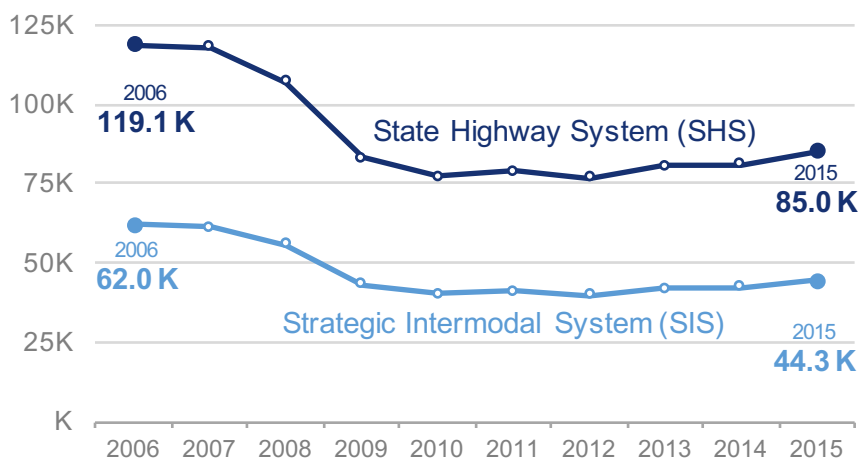
Figure 13a: Vehicle Hours of Delay During Daily Peak Period — Statewide



SOURCE: FDOT Multimodal Mobility Performance Measures Source Book

Since 2010, vehicle hours of delay in the seven most populous urban metropolitan areas has steadily but slowly increased (see **Figure 13b**). The hours of delay, however, are still well below the levels of the early 2000's. As such, Florida's transportation system appears to be accommodating economic development with capacity to support further economic growth.

Figure 13b: Vehicle Hours of Delay During Daily Peak Period — 7 Most Populous MPOs



SOURCE: FDOT Multimodal Mobility Performance Measures Source Book

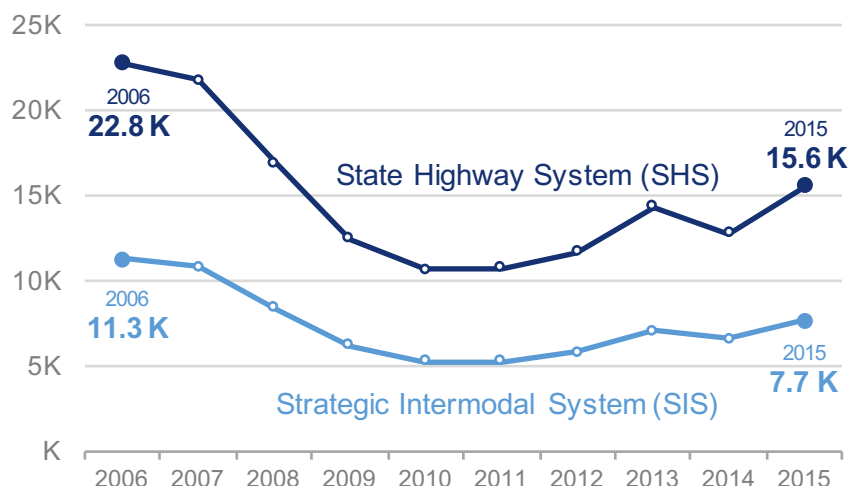
Combination Truck Hours of Delay



Truck hours of delay has generally been trending upward since 2011, but declined between 2006 and 2010.

Truck hours of delay has generally been trending upward since 2011. This is notable with respect to efficient goods movement where time does translate into money—additional cost to shippers, carriers, and consumers, or cost savings for each (see **Figure 14a**). Truck hours of delay on the SIS mirrored the SHS trends over the past decade but at a lesser rate.

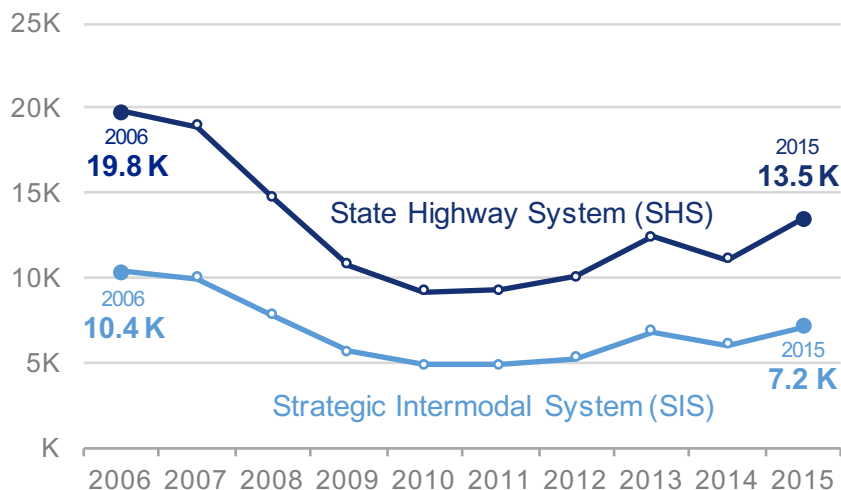
Figure 14a: Daily Combination Truck Hours of Delay — Statewide



SOURCE: FDOT Multimodal Mobility Performance Measures Source Book

Truck hours of delay within the seven most populous urban metropolitan areas declined 53.5 percent on the SHS and 52.9 percent on the SIS between 2006 and 2010 (see **Figure 14b**). Since 2010 truck delay has been increasing, but still not to pre-recession levels.

Figure 14b: Daily Combination Truck Hours of Delay — 7 Most Populous MPOs



SOURCE: FDOT Multimodal Mobility Performance Measures Source Book

Travel Time Reliability

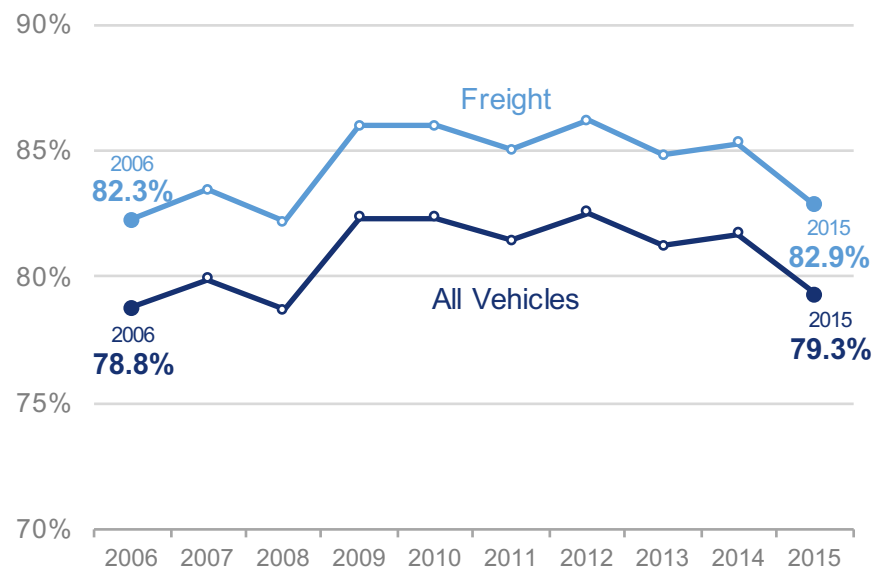


Travel time reliability is the percentage of travel occurring near the posted speed limit on freeways during the peak period (greater than or equal to 5 mph below the posted speed limit statewide and at least 45 mph within the seven most populous MPOs). As shown in **Figure 15a**, statewide travel time reliability on freeways during the peak period of travel improved from 78.8 to 82.3 percent between 2006 and 2009 for all vehicles and from 82.3 to 86.0 percent for freight. From 2009 through 2012 travel time reliability was generally flat. From 2012 through 2015 travel time reliability has been trending downward (i.e., deteriorating). Overall, travel time reliability in 2015 is close to its 2006 level.

This measure is particularly important, translating to time and cost savings for shippers and carriers who rely on the timely movement of finished goods and raw materials/commodities as trucks move approximately 83 percent of all Florida manufactured tonnage.

Figure 15a: Travel Time Reliability on Freeways During Daily Peak Period — Statewide

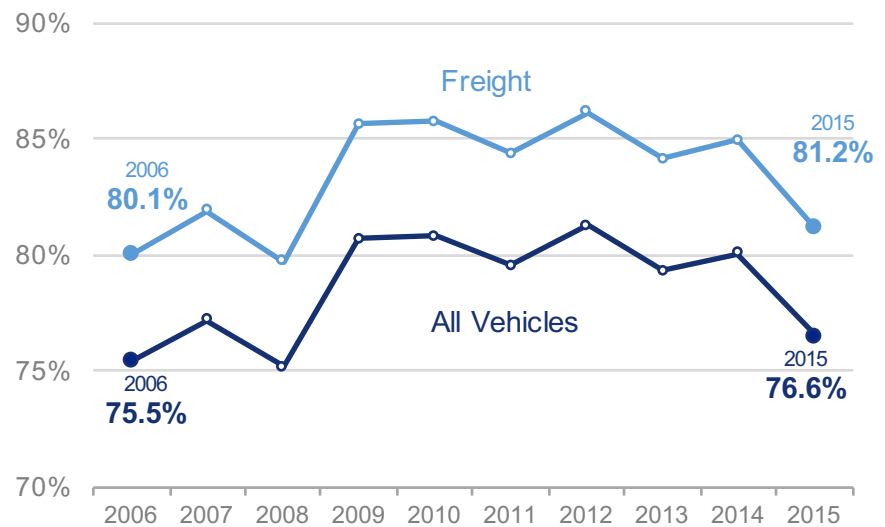
Travel time reliability in 2015 for all vehicles and freight is close to 2006 levels.



SOURCE: FDOT Multimodal Mobility Performance Measures Source Book

Travel time reliability within the seven most populous urban metropolitan areas improved from 75.5 to 80.7 percent between 2006 and 2009 for all vehicles and from 80.1 to 85.6 percent for trucks—see **Figure 15b**. From 2009 through 2012 travel time reliability was generally flat, albeit with a dip in 2011. From 2012 through 2015 travel time reliability has been trending downward, coinciding with more travel in an expanding economy.

**Figure 15b: Travel Time Reliability on Freeways During Daily Peak Period
— 7 Most Populous MPOs**



SOURCE: FDOT Multimodal Mobility Performance Measures Source Book

Rail Departure Reliability



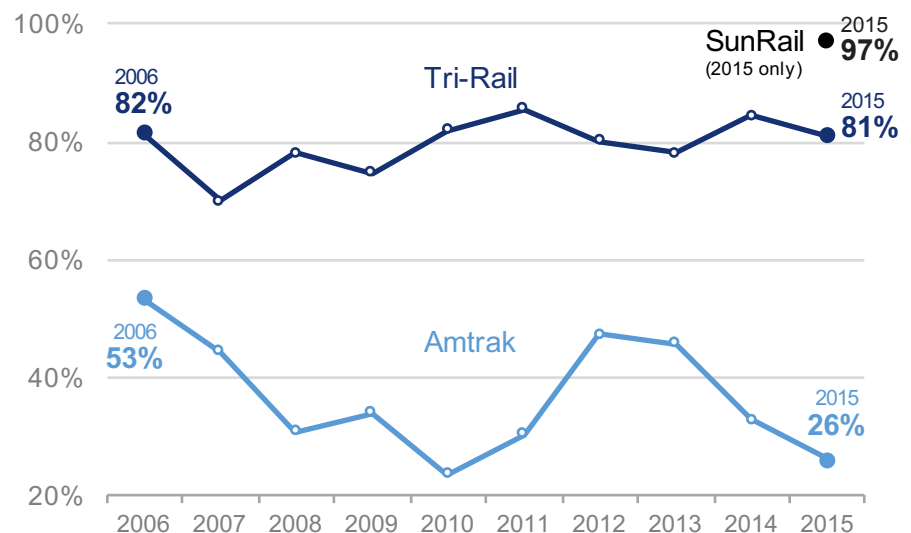
The SunRail system had an on-time performance of 97 percent in 2015.

On-time departure performance for passenger rail service has remained at about the same levels over the past decade despite annual fluctuations.

Rail departure reliability captures the on-time performance of Tri-Rail, SunRail and Amtrak (SunRail data was only available for 2015 and Metrorail data was not available at all). **Figure 16** shows that on-time departure performance for Tri-Rail fluctuated slightly over the years, but is relatively similar to its 2006 performance level. The greatest change in performance occurred for Amtrak service, where on-time performance dropped significantly between 2006 and 2010. Performance rebounded through 2012, but dropped again to a low of 26 percent in 2015. A bright spot for on-time performance is the SunRail system in central Florida, which had an on-time performance of 97 percent in 2015.

On-time performance is defined as a train departing the station within an acceptable margin of the published schedule. The public expects reliable departure times, and the extent to which they will make this mode choice relies considerably on this measure.

Figure 16: Annual On-Time Rail Departures



SOURCE: FDOT Multimodal Mobility Performance Measures Source Book

Airport Departure Reliability



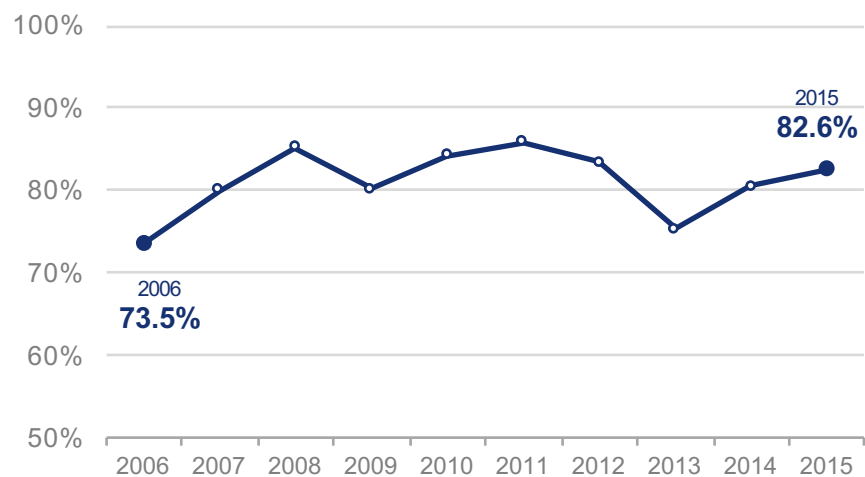
Airport on-time departures vary from year to year, but has generally improved since 2006 with marked improvement since 2013.

Departure reliability at Florida's commercial airports is defined as "on time" if a flight departs less than 15 minutes after the scheduled time in the airlines' Computerized Reservations Systems. As shown in **Figure 17**, this measure generally has been improving, although there has been considerable fluctuation over the past ten years.

By 2015 on-time departures increased to 82.6 percent. Continued federal and state investment in expanding and modernizing airport infrastructure and technology (e.g., air traffic control modernization) should support improvement in airport departure reliability.

Aviation is critical to Florida's economy. On-time aviation performance is important to the business community, residents and millions of visitors.

Figure 17: Annual On-Time Airport Departures



SOURCE: FDOT Multimodal Mobility Performance Measures Source Book

KEY STRATEGIES TO IMPROVE TRAVEL QUALITY

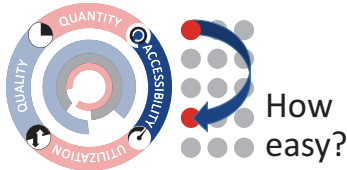
FDOT will help ensure continued progress to improve travel quality through strategies such as those listed below.





- Reduce delays associated with bottlenecks, crashes, work zones, special events, and other incidents through improved management of existing infrastructure; “Quick fix” improvements; and Strategic investments in additional system capacity.
- Use emerging technologies to reduce delay and improve reliability and customer service such as:
 - Intelligent transportation systems;
 - Automated, connected, or shared vehicles;
 - Origin to destination trip planning for all users; and
 - A universal, user friendly payment system that works across transportation modes and jurisdictional boundaries.
- Increase the efficiency of the supply chain and distribution network to, from, and through Florida, including:
 - Improving the balance of inbound and outbound freight flows by manufacturing more goods in Florida;
 - Expanding intermodal logistics centers and other freight terminals;
 - Enhancing real-time route planning, asset tracking, and load matching;
 - Facilitating off peak freight movement; and
 - Expanding use of new technologies such as automated and connected truck technologies and unmanned aerial vehicles.
- Implement FDOT’s Freight Mobility and Trade Plan.
- Add capacity to existing SIS facilities to support growth and relieve congestion, consider new SIS facilities when needed to fill major gaps in connectivity, and/or increase efficiency through innovation and technology.
- Continue Transportation System Management and Operations (TSM&O) initiatives to ensure that operations improvements are implemented in all FDOT processes.
- Continue implementing FDOT’s Complete Streets Policy to improve access and mobility for all road users, including transit riders, pedestrians, and bicyclists.

ACCESSIBILITY



FDOT has identified a series of core measures and supporting measures related to transportation system mobility. Accessibility, as a core measure reflects the ease of engaging in activities from a transportation standpoint. The supporting measures for accessibility are:



-  Commute Times Greater than 30 Minutes
-  Average Weekday Hours of Transit Service
-  Bicycle and Pedestrian Facilities
-  Aviation, Rail, and Seaport Highway Adequacy

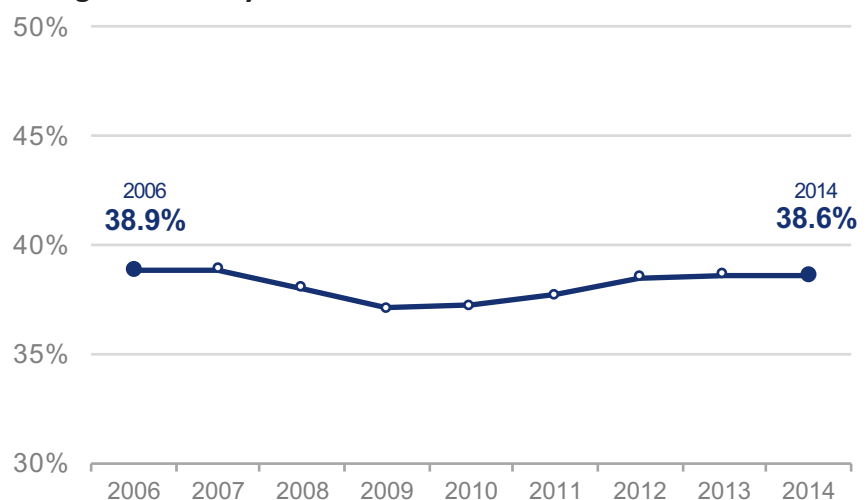
Commute Times Greater Than 30 Minutes



Figure 18 shows that worker commute times have changed little over the past ten years. The percentage of people with commute times greater than 30 minutes decreased (i.e., improved) from 38.9 percent in 2006 to 37.1 percent in 2009 and increased (i.e., worsened) up to 38.6 percent in 2014. The decentralization of jobs and housing has led to increased travel commute times. As a result, when choosing a location, families and businesses must balance location against travel times to jobs, schools, shopping and recreational activities.

The percentage of people with commute times greater than 30 minutes improved between 2006 and 2009, but slowly began to worsen thereafter. Commute times began rising in 2010.

Figure 18: Daily Commute Times Greater Than 30 Minutes



SOURCE: FDOT Multimodal Mobility Performance Measures Source Book

Average Weekday Hours of Transit Service

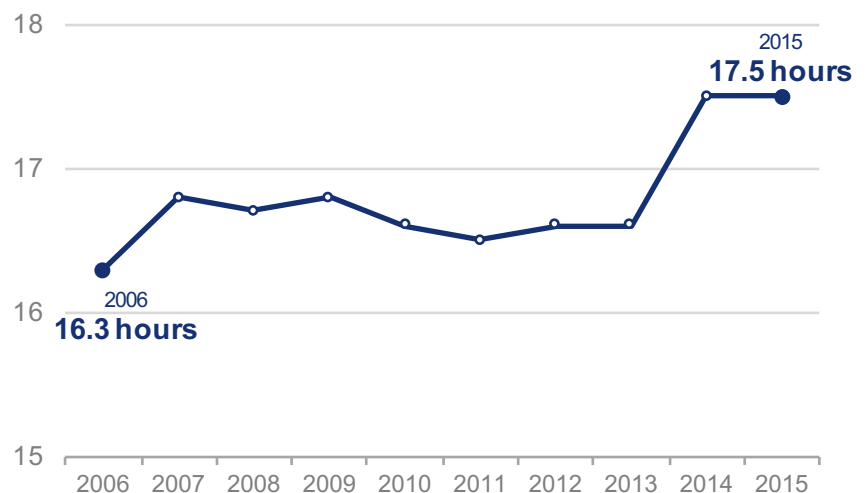


SUPPORTING
MEASURE

Between 2006 and 2015 transit service availability increased by 7.4 percent, benefiting transit users and communities.

Figure 19 shows service availability, measured by the average number of weekday hours that transit service on Florida's 31 fixed-route transit systems is available to the public. It has increased over the past ten years. The average number of weekday service hours increased 7.4 percent between 2006 and 2015, benefiting transit users and communities. Access to transit service is essential to attracting and retaining passengers. Transit is only an attractive option if it is readily available to passengers. Service availability reflects the ease with which transit passengers can use the system.

Figure 19: Average Weekday Hours of Transit Service



SOURCE: FDOT Multimodal Mobility Performance Measures Source Book

Bicycle and Pedestrian Facilities

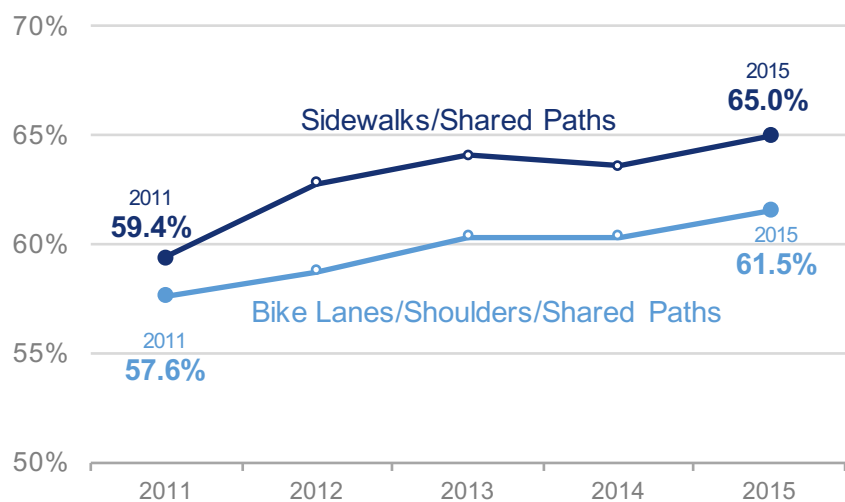


The bicycle and pedestrian facilities measures demonstrate FDOT's commitment to non-motorized modes of transportation, including the role they play in providing access to transit and improving livability and public health. **Figure 20** highlights the percentage of the SHS in urban areas³ with sidewalks, bike lanes, shoulders, or shared pathways on at least one side of the road⁴.

- In 2011 FDOT began measuring the percent of sidewalk, bicycle lane, and shared pathway coverage on SHS facilities in urban areas.
- Between 2011 and 2015 sidewalks facilities increased from 59.4 percent to 65.0 percent on SHS roads in urban areas.
- Over the same period the percentage of bike lane, shoulders, and shared path coverage increased from 57.6 percent to 61.5 percent.

Figure 20: Annual Bicycle and Pedestrian Facility Coverage on the State Highway System in Urban Areas

Between 2011 and 2015, SHS sidewalk facility coverage increased from 59.4 to 65.0 percent, while SHS bicycle facility coverage increased from 57.6 to 61.5 percent on the SHS in urban areas. This is substantial and steady progress over a relatively short period of time.



SOURCE: FDOT Multimodal Mobility Performance Measures Source Book

³ This includes all urban areas in Florida.

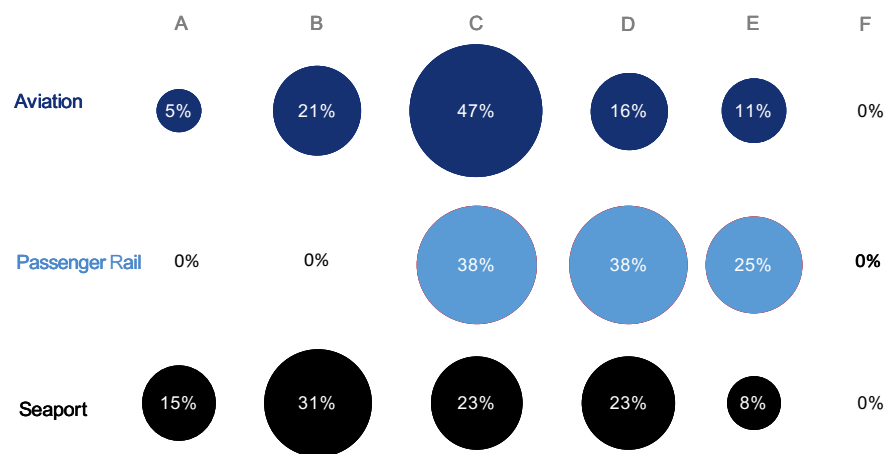
⁴ Shared pathways are included in both bicycle and pedestrian facility calculations.

Aviation, Rail, and Seaport Highway Adequacy



Intermodal connectivity is important to moving people and goods. This measure addresses the adequacy of highways that provide connections to SIS hubs including airports, rail terminals, and seaports for both passengers and freight. As shown in **Figure 21**, the majority of SIS intermodal connectors are performing at an acceptable level of service. **Figure 21** highlights that 73 percent of aviation roadway connections had a LOS of “C”, 38 percent of passenger rail roadway connections had a LOS of “C” or better, while 69 percent of seaport roadway connections had a LOS of “C” or better.

Figure 21: Aviation/Passenger Rail/Seaport Highway LOS Adequacy



The majority of SIS intermodal connectors are performing at an acceptable level of service.

SOURCE: FDOT Multimodal Mobility Performance Measures Source Book

KEY STRATEGIES TO IMPROVE ACCESSIBILITY

FDOT will help ensure that continued progress is made to improve its core measure of accessibility through these actions:




- Improve last-mile connectivity to Florida's major airports, seaports, spaceports, and other freight and passenger terminals from other modes.
- Develop multimodal corridor plans that coordinate and leverage investments in the SIS, regional, and local transportation facilities.
- Plan and develop Florida's infrastructure to better accommodate customers with limited mobility.
- Increase the number of high-quality options for walking and bicycling, including buffered bike lanes, mixed use paths and off-road trails, and sidewalks and Americans with Disabilities Act (ADA)-compliant waiting areas for transit riders.
- Plan and develop transit, bicycle paths, and trails to deliver people within walking distance of trip destinations.
- Improve the efficiency and convenience of connections among local transit systems, between local and regional transit systems, and between transit and other modes.
- Expand interregional travel options for residents, visitors, and freight, including improved intrastate air, rail, transit, and water transportation services.
- Maximize the use of existing SIS facilities, including improving the efficiency of these facilities through the use of technology and operational improvements.
- Identify freight bottlenecks and connection gaps through FDOT's ongoing freight planning and outreach to freight stakeholders.

UTILIZATION



How
much is
used?

FDOT has identified a set of core measures and supporting measures related to transportation system mobility. Utilization, as a core measure, describes how much of the transportation system is used and conversely what capacity or availability remains. This relates to user perceptions of the degree to which transportation facilities or services are congested. The supporting measures for utilization are:

-  Transit Trips per Revenue Mile
-  Miles Heavily Congested
-  Travel Heavily Congested

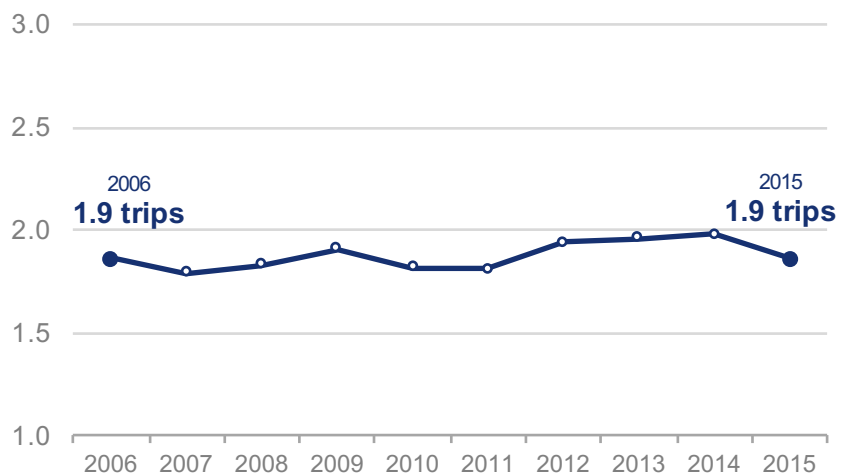
Transit Trips Per Revenue Mile



The average number of transit trips per revenue mile have remained stable over the past ten years.

Figure 22 shows that the average number of transit trips per revenue mile have remained level over the past ten years at approximately 1.9 trips per mile. It is better to have more trips per revenue mile. This measure reflects the importance of productivity and efficiency for transit providers.

Figure 22: Annual Transit Trips Per Revenue Mile



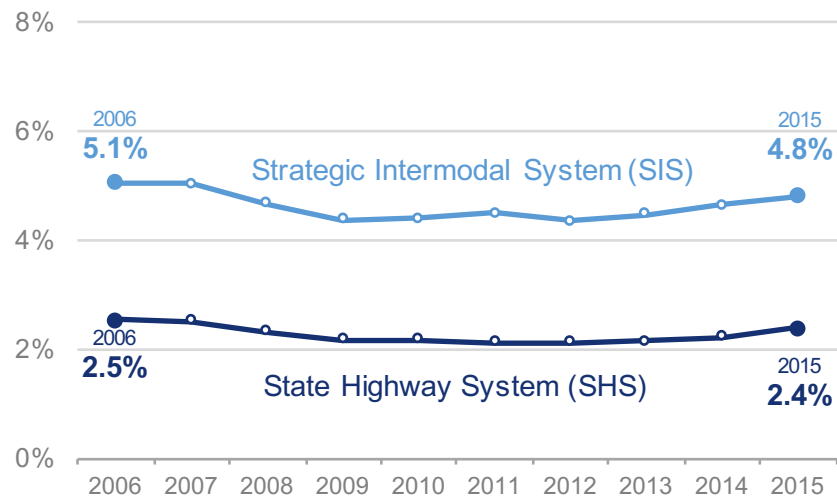
Miles Heavily Congested



Florida's roadway mileage that is heavily congested on both the SHS and SIS during the peak travel period has improved over the past decade.

Florida has had a relatively stable percentage of roadway miles that are heavily congested⁵ during the peak travel period on the SHS and on the SIS as shown in **Figure 23a**. In 2015 4.8 percent of SIS miles were heavily congested during the peak travel period. By comparison, 2.4 percent of SHS miles were heavily congested in 2015.

Figure 23a: Miles of Heavily Congested Roads During Daily Peak Period — Statewide

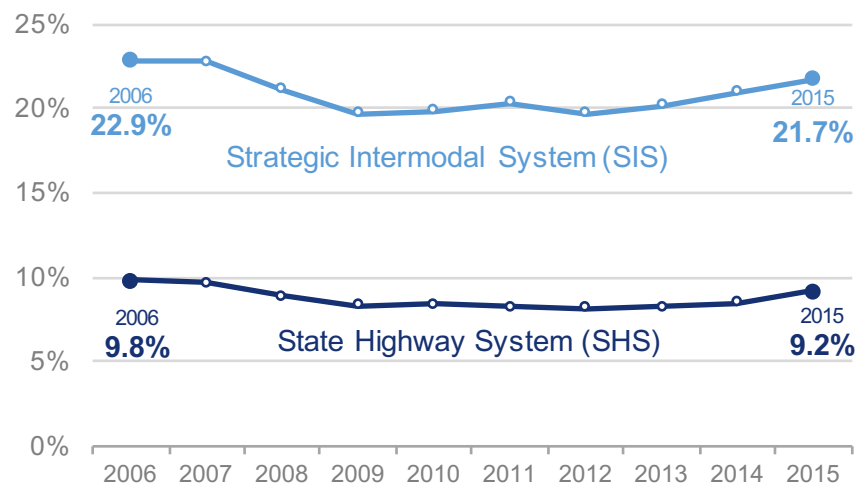


SOURCE: FDOT Multimodal Mobility Performance Measures Source Book

⁵ Heavy congestion is travel on roadways operating at a level-of-service (LOS) F.

For the seven most populous urban metropolitan areas the miles of heavily congested roadways are much higher than statewide. **Figure 23b** shows that in 2015 21.7 percent of SIS miles were heavily congested during the peak travel period—nearly 17 percent higher than statewide levels. By comparison, 9.2 percent of SHS miles were heavily congested in 2015—nearly 7 percent higher than statewide levels. Another way to look at the data is that in 2015 travelers were 4.5 times more likely to encounter heavy congestion in the seven most populated MPOs on the SIS and 3.8 times more likely on the SHS.

**Figure 23b: Miles of Heavily Congested Roads During Daily Peak Period
—7 Most Populous MPOs**



SOURCE: FDOT Multimodal Mobility Performance Measures Source Book

Managed Lanes and Express Lanes

Managed Lanes and Express Lanes consist of lanes that are managed by controlling access to adjust to actual travel demand. Express lanes improve travel time reliability for the traveling public in both toll and general use lanes.

The 95 Express lanes project in Broward and Miami-Dade counties combines tolling, transit, travel-demand management and technology to increase the people-moving capability of I-95. Combined with Bus-Rapid Transit (BRT) service, the 95 Express lanes project is reducing the number of cars during peak periods, while improving travel reliability.



Travel Heavily Congested

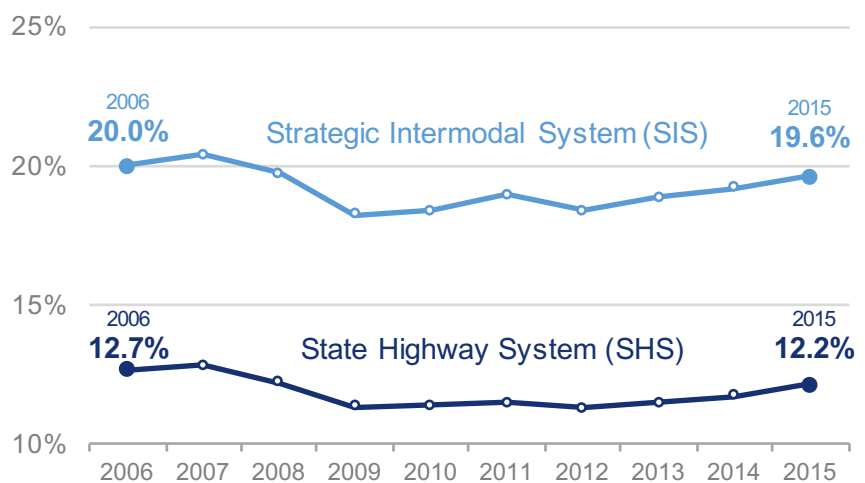


Heavy congestion on Florida's SHS and SIS roadways during the peak travel period has increased slightly since 2010.

Congestion increased slightly from 2010 through 2015 (see **Figure 24a**). Whereas, the measure of miles heavily congested is based on roadway mileage, travel heavily congested is based on vehicle miles of travel (VMT).

- In 2015, 12.2 percent of the SHS was heavily congested during the peak period.
- By comparison, in 2015, 19.6 percent of SIS highway corridors were heavily congested.

Figure 24a: Travel on Heavily Congested Roads During Daily Peak Period — Statewide



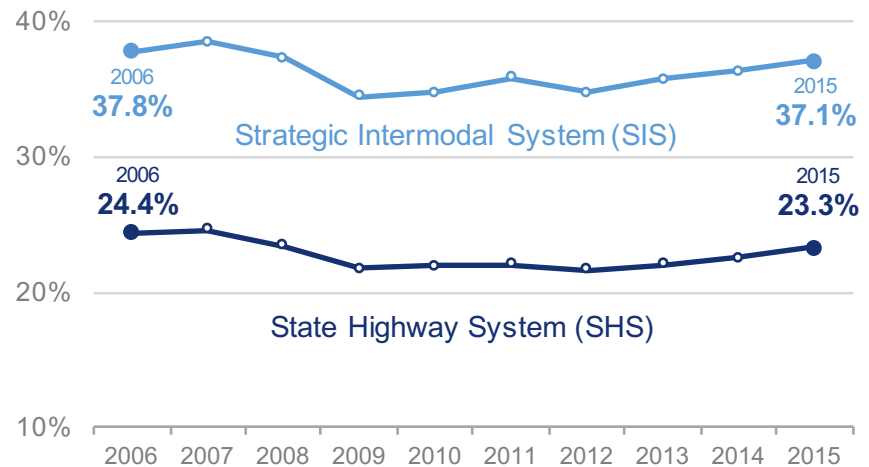
SOURCE: FDOT Multimodal Mobility Performance Measures Source Book

Similar to overall statewide travel congestion, heavy congestion in the most urbanized areas of Florida worsened slightly from 2010 through 2015 (see **Figure 24b**).

- In 2015, 23.3 percent of the SHS was heavily congested during the peak period.
- By comparison, in 2015, 37.1 percent of SIS highway corridors were heavily congested.

Figures 24a and 24b highlight that congestion is experienced more extensively in Florida's urban areas.

**Figure 24b: Travel on Heavily Congested Roads During Daily Peak Period
— 7 Most Populous MPOs**



SOURCE: FDOT Multimodal Mobility Performance Measures Source Book

KEY STRATEGIES TO IMPROVE UTILIZATION

FDOT will help ensure that continued progress is made to improve its core measure of utilization through these actions:

- Accommodate options to support shorter distance trips, such as circulators and on-demand transit that reflect regional and community visions.
- Accommodate mobility options to support telework, telepresence, distance learning, distance medicine, and similar communication options as a substitute for travel.
- Improve public transportation services within rural areas and between rural and urban areas.
- Implement managed lanes to manage congestion.
- Continue to advance intelligent transportation systems (ITS) and access management investments that improve system performance.
- Focus on new and emerging technologies that have potential for improving transportation operating efficiency.
- Promote and/or support efforts of MPOs and others that encourage ride sharing, expanded transit use, flexible work times, and telecommuting.

Figure 25: Multimodal Mobility Performance Measures Matrix

Mode		QUANTITY	QUALITY	ACCESSIBILITY	UTILIZATION
PEOPLE	Auto/ Truck	Vehicle Miles Traveled	% Travel Meeting LOS Criteria	Time Spent Commuting	% Travel Heavily Congested
			% Miles Meeting LOS Criteria		
			Travel Time Reliability		
			Travel Time Variability		
			Vehicle Hours of Delay		
		Person Hours of Delay			
	Person Miles Traveled	Average TravelSpeed	Number of Jobs Accessible by Auto	Hours Heavily Congested	
		Vehicle Fatalities and Serious Injuries			
		Vehicle Crash Rates			
	Transit	Revenue Miles	Revenue Miles between Failures	Weekday Span of Service	Passenger Trips Per Revenue Mile
		Passenger Trips		Population within ½ mile of Fixed-Route Service	
				Number of Jobs Accessible by Transit	
	Pedestrian		Level of Service (LOS)	% Sidewalk Coverage	
Pedestrian Fatalities and Serious Injuries					
Bicycle		Level of Service (LOS)	% Bike Lane/Shoulder Coverage		
		Bicyclist Fatalities and Serious Injuries			
Aviation	Passengers	Departure Reliability		Demand to Capacity Ratios	
Rail	Passengers	Departure Reliability			
Seaports	Passengers				
PEOPLE & FREIGHT	Auto/ Truck			% Miles Heavily Congested	Vehicles Per Lane Mile
	Aviation			Highway Adequacy (LOS)	
	Rail			Highway Adequacy (LOS)	
	Seaports			Highway Adequacy (LOS)	
FREIGHT	Truck	Combination Truck Miles Traveled	TravelTime Reliability		Combination Truck Backhaul Tonnage
		Truck Miles Traveled	TravelTime Variability		
		Combination Truck Tonnage	Combination Truck Hours of Delay		
		Combination Truck Ton Miles Traveled	Combination Truck Average TravelSpeed		
		Value of Freight	Combination Truck Cost of Delay		
	Aviation	Tonnage			
		Value of Freight			
	Rail	Tonnage	Active Rail Access		
		Value of Freight			
	Seaports	Tonnage	Active Rail Access		
		Twenty-foot Equivalent Units			
		Value of Freight			

SOURCE: FDOT Multimodal Mobility Performance Measures Source Book

Multimodal Mobility Performance Measures

The Multimodal Mobility Performance Measures (MMPM) Program measures and reports on transportation system performance to enable a better understanding of how to improve mobility. The 2016 Florida Multimodal Mobility Performance Measures Source Book is a compendium of current and historical data and analysis describing the performance of Florida's transportation system. It is intended to be the primary source of mobility performance measure results for the State of Florida.

More information can be found at floridampms.com.



Partner Connections

Partner Connections highlights FDOT's recent collaborations with various partner and stakeholder organizations to consider ways to improve our transportation system performance together.

“ There has been a trend toward driving less, walking and cycling more, and taking public transportation. Not because people have to — but because they want to.

Thomas Deardorff
Polk Transportation Planning Organization

”

“ Florida's aviation facilities are a gateway to the world for business, students, and myriad other purposes.

Michael Stewart
Jacksonville Airport Authority

”

Strategic Mobility Partners

Enterprise Florida
Florida Airports Council
Florida Defense Alliance
Florida Ports Council
Florida Public Transportation Association
Florida Railroad Association
Florida Transportation Commission
Florida Trucking Association
Metropolitan Planning Organization
Advisory Council
Space Florida
Transportation and Expressway Authority
Membership of Florida



Innovation

PERFORMANCE SUMMIT 2016
FOR TRANSPORTATION PARTNERS

Mobility

These ideas on innovation, collaboration, and potential measures were identified by FDOT's partners through our first Summit for Transportation Partners held in May 2016 and through the Florida Transportation Plan.

- Use emerging technologies to reduce delay and improve reliability and customer service, such as:
 - » Intelligent transportation systems
 - » Automated, connected, or shared vehicles
 - » Origin to destination trip planning for all customers
 - » A universal, customer friendly payment system that works across transportation modes and jurisdictional boundaries
- Seamless connectivity of infrastructure and information across different modes of transportation
- Use emerging technologies to provide multimodal and alternative route choices
- Adapt infrastructure design and performance standards to emphasize person and freight mobility rather than vehicle throughput
- More efficient supply chain for movement of goods that includes real-time load matching



Collaboration



Potential Measures

These ideas on innovation, collaboration, and potential measures were identified by FDOT's partners through our first Summit for Transportation Partners held in May 2016 and through the Florida Transportation Plan.

- Provide quality transportation choices to meet mobility expectations from a more diverse population of residents and visitors
- Share both statewide and local performance data to support new private sector business models
- Establish a framework for data sharing; for agencies and to share and compare performance, utilizing social media as a platform for performance information
- Engage in conversations that assess performance by balancing speed, mobility, and safety
- Plan and develop investments in terminal and corridor capacity that are consistent with regional and local visions that provide economic benefits
- Develop multimodal corridor plans that coordinate and leverage investments in the SIS, regional, and local transportation facilities
- Visualize data using maps to better understand the challenges, problems, and opportunities before us
- Use technology to measure the impact of bicycle and pedestrian programs
- Measure changes in customer satisfaction and usage of bike/ped networks
- ITS coverage of system
- Estimated use of automated vehicle technology
- Modal performance comparisons
- Average Transit Load Factors
- Transit Access
- Extent of telecommuting over time
- Benefits of complete streets and the importance of context sensitive implementation

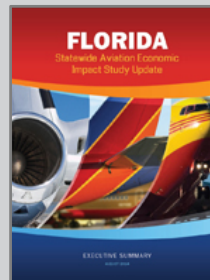
Partner Connection Reports



The *FTP Vision Element* containing trends, uncertainties, and themes that will shape the future of transportation in Florida (50 years).



The *Strategic Intermodal System Policy Plan* helps guide decisions about future SIS investments and how priorities are established given limited funding.



The *Statewide Aviation Economic Impact Study* provides the economic impact associated with aviation facilities.



The *Florida Seaport System Plan* presents a vision that Florida is a Global Gateway.



The *Freight Mobility and Trade Plan* is designed to improve the efficiency of freight movement in domestic and global markets.